Registry — file plus New Bldg

Appendix C

TRANSPORTATION

1. The following table gives the peak hours on the roadway network surrounding the CIA headquarters:

Existing Peak Hours and Peak Periods

Facility	AM PK HR	AM PK PER	PM PK HR	PM PK PER
G.W. Parkway	7:00-8:00	6:00-10:00	4:00-5:00	3:00-7:00
Rt. 123	7:00-8:00	6:30- 9:00	5:00-6:00	4:00-6:00
Rt. 193	7:30-8:30	7:00- 9:00	4:30-5:30	4:00-6:00

2. The traffic analysis in this document is based on estimates of roadway capacity. The capacity of a road is "the maximum number of vehicles which have a reasonable expectation of passing over a given section of roadway during a given time period under prevailing roadway and traffic conditions."[1] It is related to roadway width, number of lanes, percentage of trucks and buses, speed limit, turning movements, presence of signals, grades, and other factors affecting the quality of flow. The level of service of a roadway is a qualitative measure of the effect of speed, travel time, interruptions, freedom to maneuver, safety, driving comfort, convenience, and operating costs. Travel speed and the volume-to-capacity ratio are the major factors used to determine LOS. A complete description of the LOS concept is provided in the HCM.[2] There are six levels of service ranging from LOS A, the best, to LOS F, the worst.

The six levels are briefly defined as follows:

Level A is a condition with low traffic volumes, vehicles moving at approximately the speed limits, and free-flow conditions.

Level B is a condition with light traffic volumes, minor speed restrictions, and stable flow.

Level C is a condition with light moderate traffic volumes with speed and maneuvering restricted to a limited degree by the amount of traffic.

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[1] Highway Capacity Manual (HCM), Highway Research Board, Special Report 87, 1965.

[2] Ibid.

Level D is a condition with heavy traffic operating at tolerable speeds, although temporary slowdowns in flow may occur. Level D is generally considered the design level of service for urban conditions.

Level E is a condition of extremely heavy flow and relatively low speeds. It is considered the capacity of the roadway. The traffic flow is unstable, and short stoppages may occur.

Level F is a condition of heavy flow in which stoppages are frequent and speeds are very low. It is an unstable traffic condition under which traffic often comes to a complete halt.

3. The GSA methodology for calculating parking demand at a facility consists of these steps:

1. Determine the total number of employees.

2. Take 2 percent of the total number to determine the number of VIPS who will be allowed to drive alone.

3. Subtract VIPS from total employees.

4. Subtract employees who use transit, walk, or bike to work.

5. Determine a reasonable vehicle occupancy of the remaining employees considering alternative parking locations, location of the site, the place of residence of the employees, and the start work times.

6. Divide the resulting number of employees in Step 4 by the vehicle occupancy determined in Step 5 to determine the number of parking spaces needed.

7. Add the VIP spaces to Step 6 to determine total spaces needed.

3.2 Number and Type Employees

The total number of persons employed by the CIA is classified. Under the Master Plan, approximately 3,000 Agency employees currently working in outlying locations will be consolidated at the Langley site. When the National Capital Planning Commission reviewed the CIA's Preliminary Master Plan in 1972, it suggested a limit of 2,000 additional employees for the Langley site. At that time, the CIA headquarters contained about 1,000 more employees than it does now (computers have displaced some personnel in the interim). Therefore, the new proposed expansion is consistent with the earlier NCPC guidelines.

3.3 Transportation and Circulation

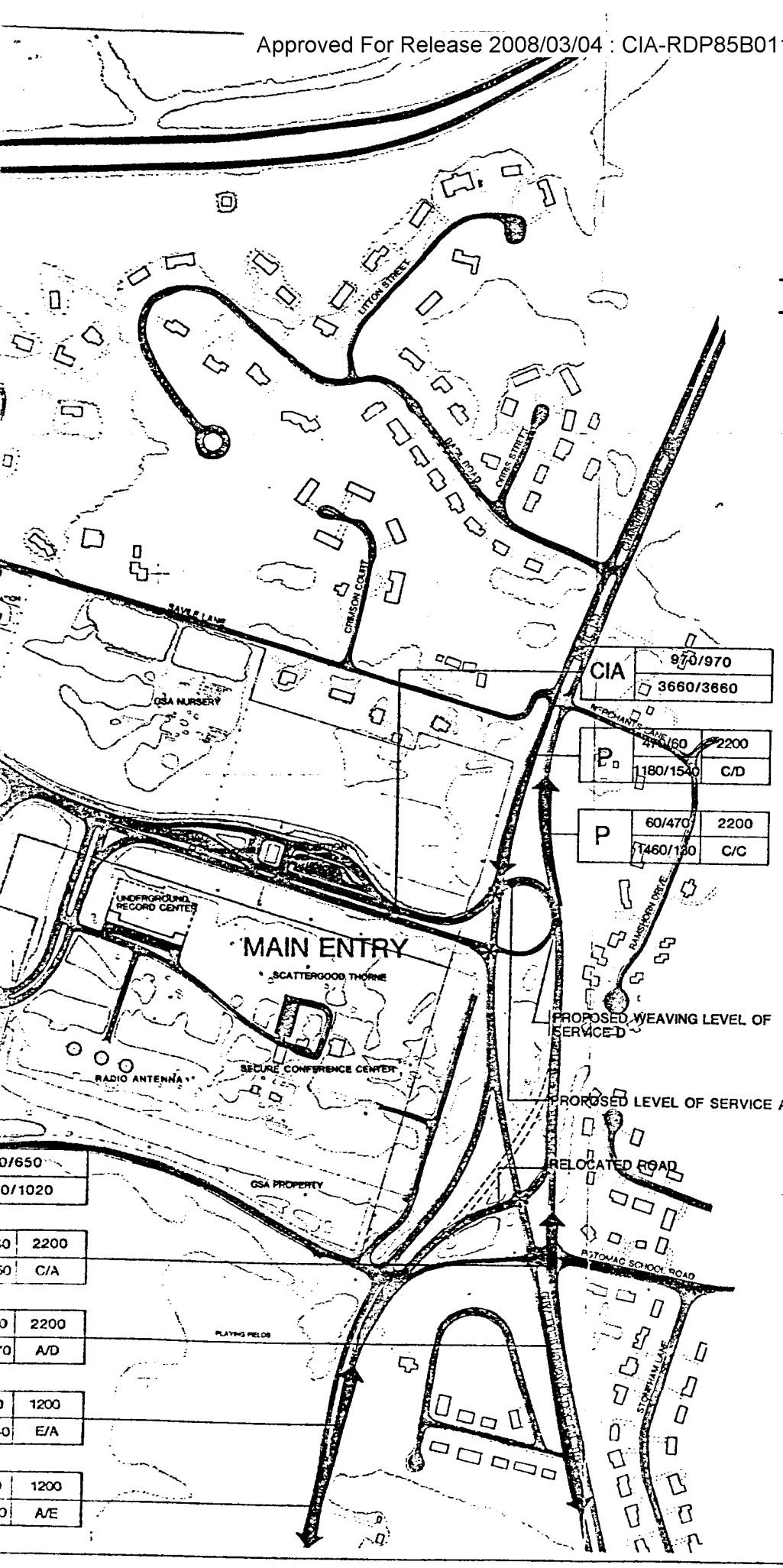
Regional Access: The CIA Headquarters site has regional access from the George Washington Memorial Parkway, Route 123, and Route 193. Interstate 495 (the Beltway) is also a major access road. The George Washington Parkway is a four-lane limited access roadway with a full interchange providing access to the north gate of the site. The 1981 Average Daily Traffic (ADT) volume on the George Washington Parkway at the interchange is 32,800. Route 123 serves the main entrance of the headquarters site at the south gate. Route 123 is a four-lane divided arterial road that carries approximately 31,000 vehicles daily in the vicinity of the site. Route 193 is a two-lane road that carries an ADT of 10,600. It serves the west gate via the Turkey Run Access Road.

Traffic counts were made in July and August 1981 and factored upward to account for seasonal traffic variations based on Virginia Department of Highways and Transportation historical counts. The map on the next page (E-6) shows the existing peak hour traffic volumes attributable to the CIA employees, the total peak hour traffic volumes (including the CIA volumes), the existing roadway capacities, and the existing peak hour levels of service (LOS). Route 193 eastbound is the only roadway with an existing level of service that indicates heavy traffic congestion during the AM peak hour. During the PM peak hour, both Route 193 and the George Washington Parkway experience heavy congestion. The Route 123-George Washington Parkway Interchange and George Washington Parkway east of Route 123 currently experience capacity problems during the peak hours. However, these conditions are not attributable to the CIA.

Public Transit: WMATA currently serves the CIA site with four separate bus routes. Service is provided to Oakton, Shirlington, Herndon, George Mason University, the Rosslyn Metro Station, and the Farragut Metro Station. Nineteen buses run between 3:00 and 6:00 PM, but the ridership is low, with an equal number of passengers boarding eastbound and westbound buses. The existing transit modal share is 3.6 percent.

CENTRAL INTELLIGENCE AGENCY

Master Development Plan and Environmental Assessment



PROPOSED SITE PLAN
TRAFFIC FLOW

LEGEND

P PROJECTED	PROJECTED CIA PEAK HOUR AM/PM	CAPACITY
	PROJECTED TOTAL PEAK HOUR AM/PM	PROJECTED LEVEL OF SERVICE (LOS) AM/PM

CIA	PEAK HOUR AM/PM
	DAILY TOTAL IN/OUT

* SIGNALIZED INTERSECTION

Skidmore, Owings & Merrill
Dames & Moore
JHK & Associates
Cervantes & Associates, P.C.

Fig. 16

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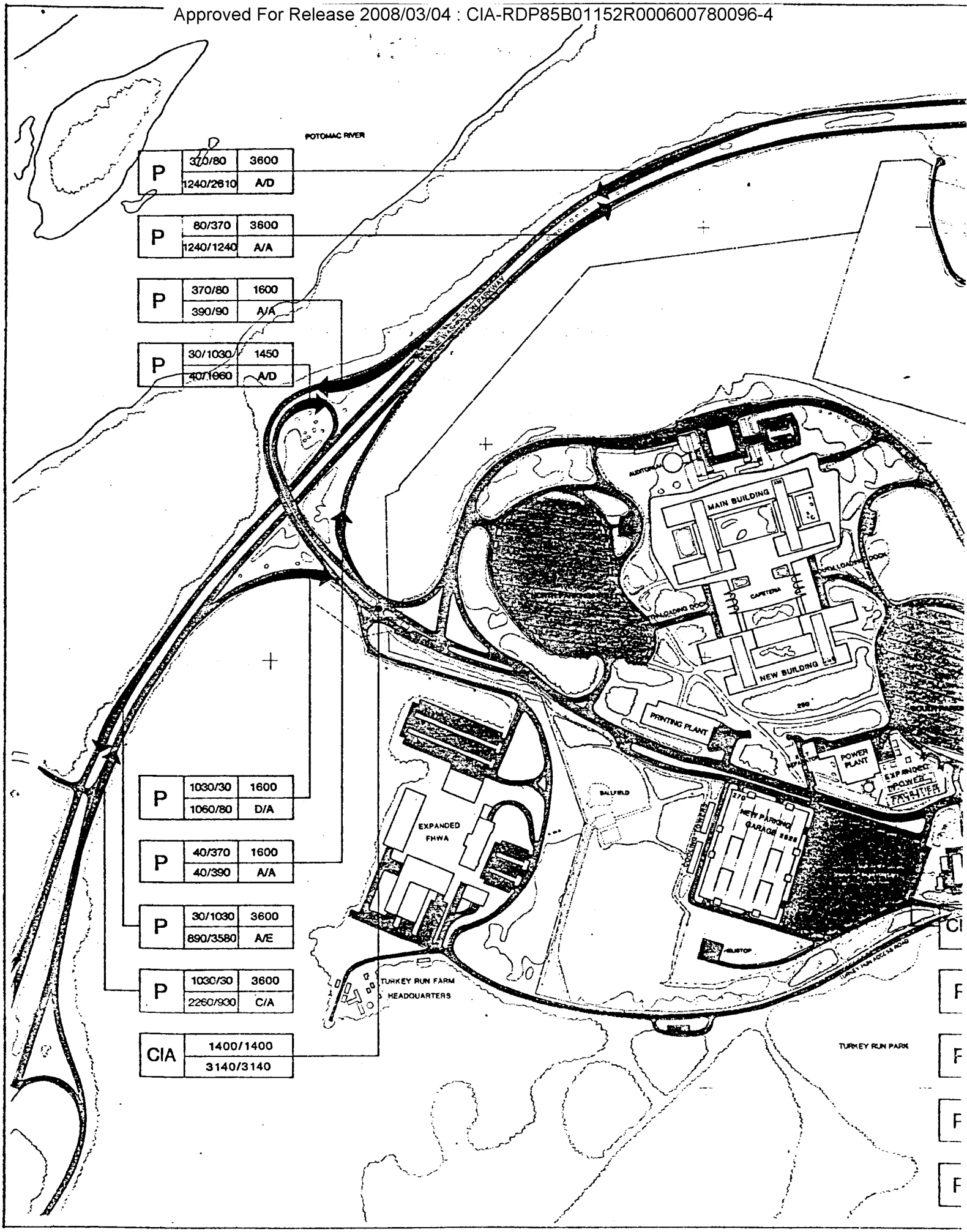
November 1981

CIA Contract #

81-A599900-000



The Agency operates a shuttle bus service between its various offices and the Pentagon. Nine buses and ten vans make approximately 51 round trips per day and transport approximately 16,800 passengers weekly.

Parking and Loading: There are three main parking lots serving the CIA site. The lots contain 4,902 full-sized spaces. There are 270 on-street parking spaces along internal roads and 299 other spaces adjacent to service buildings. The headquarters building is served by two loading docks. They are located on the western side of the building, one at the northern and one at the southern wing. The printing plant and power plant also have loading areas.

Pedestrian Movement: Currently less than one percent of the CIA employees use walking or bicycling as their mode of arrival. However, a good sidewalk network is provided for persons walking from the parking lots to the buildings. In addition, a crossing guard is provided between 7:00-9:00 AM and 4:30-5:45 PM for those persons crossing the major internal road from the west parking lot.

Modal Split: A modal split survey was taken in April 1981 to determine the mode of arrival for headquarters and consolidation sites. The table below shows the results of this survey. A carpool is defined as two or more persons in a car. As indicated, the headquarters and the four suburban Virginia sites have high auto usage and low transit usage.

CIA MODAL SPLIT

		D.C. Sites		Virginia Sites			
Mode	Head-quarters	1	2	1	2[1]	3[2]	4[2]
Drive Alone	55.7	26.5	31.0	63.6	35.9	81.6	63.5
Carpool	38.2	52.7	55.2	23.1	36.2	16.8	34.2
Vanpool	1.7	3.5	----	----	0.9	----	----
Private Comm. Bus	----	----	3.4	----	2.5	----	----
Transit	3.6	15.9	10.3	9.4	21.7	0.5	0.5
Walk, Bike	0.9	1.4	----	3.9	2.9	1.1	1.7

[1]Near Metrorail Station

[2]Suburban Sites

Source: CIA

4.17 Energy Use

Existing Conditions: The Headquarters has sources of energy available other than electricity to power various systems. The on-site standby power runs on diesel fuel. This system is used intermittently when there is an interruption in VEPCO-supplied power and is also tested weekly. It consumes about 70,000 gallons of diesel fuel per year. On-site boilers, which provide heat, hot water, and humidity to the building in the form of steam, are run by fuel oil. The boilers consume approximately 1.3 million gallons of fuel oil yearly. Propane is another energy source used at the CIA facility to run appliances at the cafeteria.

Impacts and Mitigation: As part of the Master Plan, the existing transformers, boilers, chillers, and cooling towers supplying normal power, heating, and cooling will be replaced by new and larger-capacity equipment. The new systems will be more efficient, conserving both electrical power for the cooling system and fuel oil for the heating system. In addition, two of the oldest standby power generators will be replaced with new, more efficient units, permitting a saving in additional diesel fuel consumption.

Energy conservation and waste mitigation would depend upon the design of the buildings, the materials used, and the efficiency of the lighting system, electric office products, computers, support machinery, etc. The use of insulating building materials and efficient machinery and appliances would conserve energy within the building. The orientation of the building, the number and type of windows used, and landscaping would result in passive heating and cooling of the structure. Restrictions on thermostat settings, employee awareness of conservation measures, and innovative techniques such as rooftop solar panels and the use of computer-generated heat could also aid in mitigating energy waste.

4.18 Transportation

Existing Conditions: The CIA Headquarters site has regional access from the George Washington Memorial Parkway, Route 123, and Route 193. The George Washington Parkway is a four-lane limited access roadway with a full interchange providing access to the north gate of the site. The 1981 Average Daily Traffic (ADT) volume on the George Washington Parkway at the interchange is 32,800. Route 123 serves the main entrance of the headquarters site at the south gate. Route 123 is a four-lane divided arterial road that carries approximately 31,000 vehicles daily in the vicinity of the site. Route 193 is a two-lane road that carries an ADT of 10,600. It serves the west gate via the Turkey Run Access Road.

Traffic counts were made in July and August 1981 and factored upward to account for seasonal traffic variations based on

Virginia Department of Highways and Transportation historical counts. The existing CIA peak hours are from 7:30-8:30 AM and 4:30-5:30 PM, when 60 percent of the employees arrive or leave the site. Peak hours on the surrounding roadway network are given in Appendix C, Section 1.

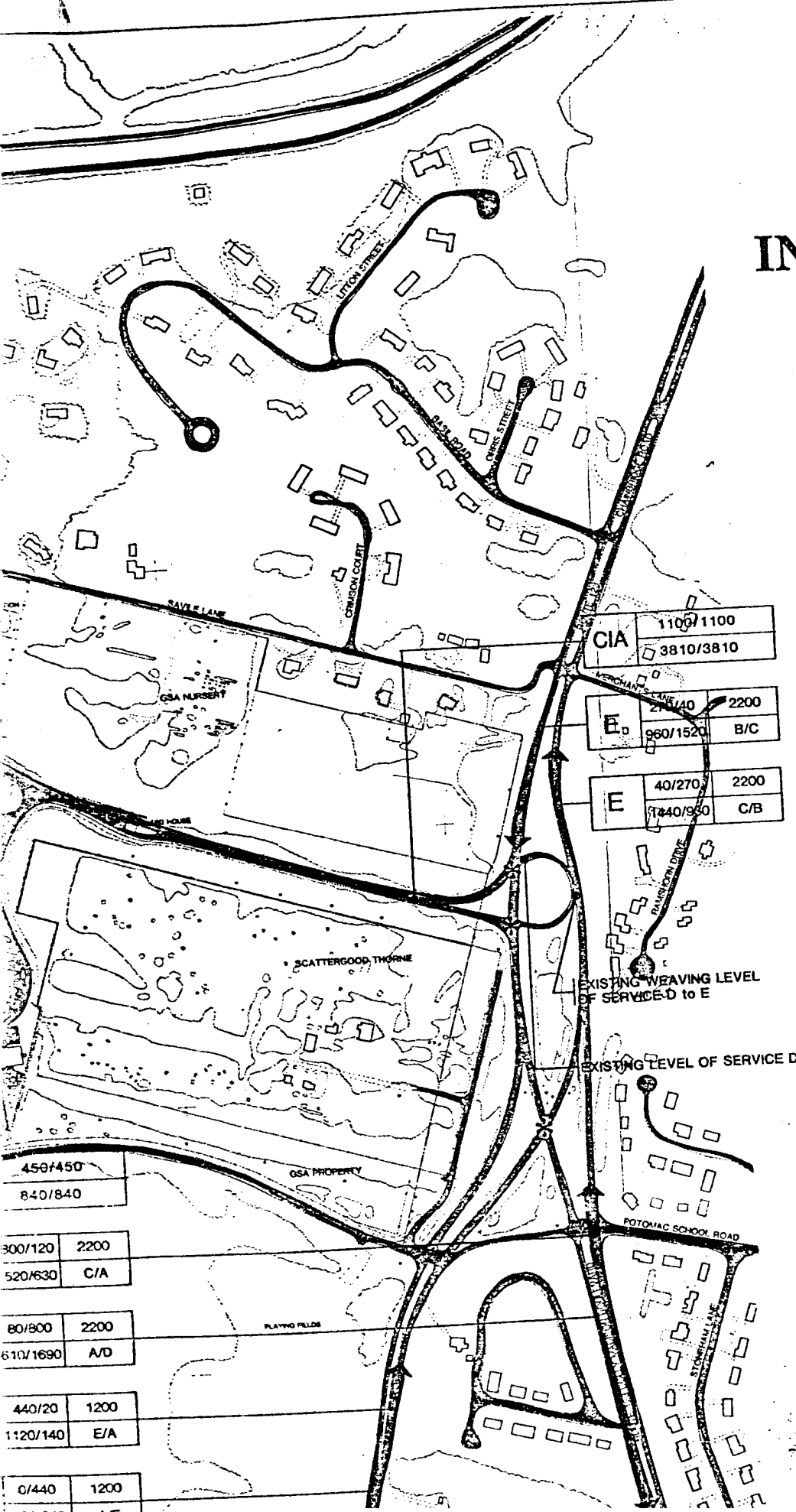
Figure 15 shows the existing peak hour traffic volumes attributable to the CIA employees, the total peak hour traffic volumes (including the CIA volumes), the existing roadway capacities, and the existing peak hour levels of service (LOS). An explanation of levels of service appears in Appendix C, Section 2. Route 193 eastbound is the only roadway with an existing level of service that indicates heavy traffic congestion during the AM peak hour. During the PM peak hour, both Route 193 and the George Washington Parkway experience heavy congestion. The Route 123-George Washington Parkway Interchange and George Washington Parkway east of Route 123 currently experience capacity problems during the peak hours. However, these conditions are not attributable to the CIA site. Peak hours on the surrounding roadway network are given in Appendix C, Section 1.

WMATA currently serves the CIA site with four separate bus routes. Service is provided to Oakton, Shirlington, Herndon, George Mason University, the Rosslyn Metro Station, and the Farragut Metro Station. Nineteen buses run between 3:00 and 6:00 PM, but the ridership is low, with an equal number of passengers boarding eastbound and westbound buses. The existing transit modal share is 3.6 percent.

The Agency operates a shuttle bus service between its various offices and the Pentagon. Nine buses and ten vans make approximately 51 round trips per day and transport approximately 16,800 passengers weekly.

There are three main parking lots serving the CIA site. The lots contain 4,902 full-sized spaces. There are 270 on-street parking spaces along internal roads and 299 other spaces adjacent to service buildings.

A vehicle accumulation study was performed in August 1981 to determine the traffic patterns within the site and to estimate how many parking spaces are actually being used. The study indicated that 76 percent of the spaces were filled by 9:00 AM and that peak accumulation occurred at 11:00 AM with 82 percent of the spaces filled. These figures have been adjusted for seasonal variations to determine the number of usable spaces for the analysis of the consolidation conditions. The slight excess capacity in the existing parking lots allows the future vehicle



CENTRAL INTELLIGENCE AGENCY

Master Development Plan and Environmental Assessment

EXISTING SITE PLAN
TRAFFIC FLOW

LEGEND

E EXISTING	EXISTING CIA PEAK HOUR AM/PM	EXISTING CAPACITY
	EXISTING TOTAL PEAK HOUR AM/PM	EXISTING LEVEL OF SERVICE (LOS) AM/PM

CIA	PEAK HOUR AM/PM
	DAILY TOTAL IN/OUT

* SIGNALIZED INTERSECTION

Skidmore, Owings & Merrill
Dames & Moore
JHK & Associates
Cervantes & Associates, P.C.

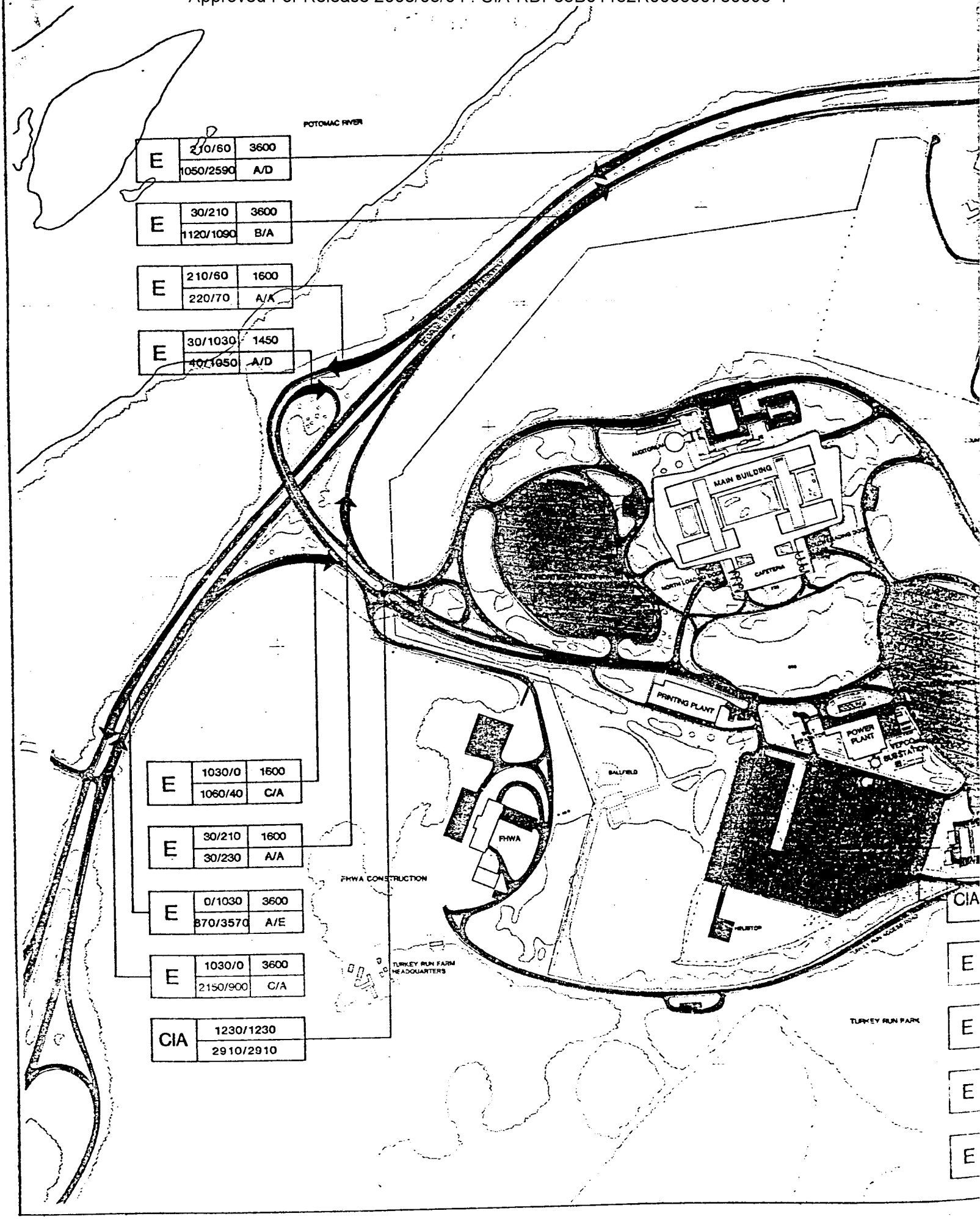
E-6

Scale 0 200 400

November 1981

CIA Contract #

81-A599900-000



Approved For Release 2008/03/04 : CIA-RDP85B01152R000600780096-4

occupancy rate under the Master Plan to be marginally lower than it would be if current parking accumulation were 100 percent.

Currently less than one percent of the CIA employees use walking or bicycling as their mode of arrival. However, a good sidewalk network is provided for persons walking from the parking lots to the buildings. In addition, a crossing guard is provided between 7:00-9:00 AM and 4:30-5:45 PM for those persons crossing the major internal road from the west parking lot.

A modal split survey was taken in April 1981 to determine the mode of arrival for headquarters and consolidation sites. The table below shows the results of this survey. A carpool is defined as two or more persons in a car. As indicated, the headquarters and the four suburban Virginia sites have high auto usage and low transit usage.

CIA MODAL SPLIT
(Percentages)

		D.C. Sites		Virginia Sites			
Mode	Head-quarters	1	2	1	2[1]	3[2]	4[2]
Drive Alone	55.7	26.5	31.0	63.6	35.9	81.6	63.5
Carpool	38.2	52.7	55.2	23.1	36.2	16.8	34.2
Vanpool	1.7	3.5	-	-	0.9	-	-
Private Comm. Bus	-	-	3.4	-	2.5	-	-
Transit	3.6	15.9	10.3	9.4	21.7	0.5	0.5
Walk, Bike	0.9	1.4	-	3.9	2.9	1.1	1.7

1 Near Metrorail Station

2 Suburban Sites

Impacts and Mitigation: There are two major impacts on the transportation system associated with the proposed CIA consolidation: parking demand on-site and traffic impacts on the surrounding road network. In its review of the 1972 Master Plan, NCPC suggested that new parking be limited to 1,000 spaces.

Traffic congestion on the surrounding roadway network is the concern of VDH&T and the National Park Service. Their main interest is to maintain a good level of service on their roadways.

Emphasis has been placed on using Transportation System Management (TSM) to mitigate the impacts of the proposed consolidation. TSM is based on the proposition that system capacity is as much a function of operating efficiency as of physical facilities. Emphasis is shifted to improvements in service and operations as the preferred means of improving mobility as well as of conserving energy, improving air quality, enhancing the environment, and saving public funds. TSM measures that an employer can carry out generally include ridesharing, alternative work schedules, transit service improvements, parking management, pedestrian and bicycle facilities and programs, marketing, and operational support activities.

The number of existing parking spaces that would be available for future use under the Master Plan is 5,110, including 4,902 spaces in the three main lots and 230 on-street spaces. The motor pool's and visitors' 251 parking spaces have not been included as potential employee spaces. Up to 1,000 spaces could be added as part of the Master Plan, based on the NCPC's guidelines. Therefore, a total of 6,202 parking spaces would be available for employee parking. The average absentee rate of CIA employees is nine percent. However, in order to be conservative, a three percent vehicle absentee rate was assumed. Therefore, a limit of approximately 6,000 parking spaces has been used for future analysis. The CIA will implement a parking permit program that will ensure that only 6,000 spaces will be needed.

Two methodologies were used to estimate the actual demand for parking spaces after consolidation: the GSA methodology and a demand/supply methodology. The GSA methodology originated with Circular No. A-118 from the Executive Office of the President, Office of Management and Budget, on the subject of Federal Employee Parking Facilities. The circular instructs agencies to institute effective carpooling incentives, especially at the large suburban installations which have large parking facilities and no parking fee. Assuming a reasonable vehicle occupancy rate, application of the GSA methodology (described in Appendix C, Section 3) yields a demand for about 6,000 parking spaces.

The demand/supply methodology uses the existing modal split of the employees who would be consolidated, modifies the modal split to account for lack of good public transportation and reduction of pedestrians and bicyclists from the consolidated sites, and determines how many additional parking spaces would be needed at the CIA headquarters to accommodate these

employees. Using this methodology, 2,480 additional parking spaces would be needed to accommodate the consolidation employees.

Since only 1,000 additional spaces will be provided, the CIA will have to increase its program of carpool/vanpool usage for all of its employees. The Agency should apply its carpool matching program to the employees who will be consolidated before consolidation actually occurs. This advance planning will enable carpooling to begin on the first day of operation of the new Langley facilities. In addition, priority parking areas should be designated for vanpools, carpools with four or more occupants, and other carpools. The establishment of these parking areas should be designed to encourage vanpooling and carpooling to the maximum extent feasible.

The additional pedestrian traffic associated with the new parking garage will not conflict with traffic on the internal road as long as the current crossing guard continues to control the crosswalk at peak periods.

Future CIA traffic has been estimated using the vehicles generated by the 6,000 parking spaces provided at the headquarters site. Traffic counts taken at the CIA gates and the surrounding street networks were used to determine the directional distribution of the existing employees. The home zip codes of the consolidation employees were used to determine what access roads these employees would use to come to the CIA site. The table below gives the directional distributions of the existing headquarters employees, the consolidation employees, and the combination of the two.

CIA DIRECTIONAL DISTRIBUTION
(Percentages)

	Existing Headquarters	Consolidation	Combination
G.W. Parkway			
. from east	8	14	10
. from west	40	44	42
Route 123			
. from south	23	22	23
. from north	18	14	16
Route 193	11	6	9

The CIA headquarters currently has three basic start times: 7:00, 8:00, and 8:30 AM, with 60 percent of the employees arriving between 7:30 and 8:30 AM. If these start times remained constant after consolidation, both the George Washington Parkway and Route 193 would experience severe congestion after consolidation. In addition, the weave between Route 193 eastbound traffic and Route 123 CIA-bound traffic would be very congested. The CIA-bound traffic would queue past the ramp length and into the weaving lane on Route 123 to create a hazardous and accident-inducing situation. Therefore, the CIA has expressed a willingness to stagger its work start times so that the proposed consolidation would not generate additional traffic during the peak hours or substantially lower the existing levels of service on the surrounding roadways. Early work start times are preferable, although 8:30 AM to 5:00 PM should still be the largest shift. The table below gives the work shifts and the percentage of employees and number of vehicles associated with each shift.

SHIFT TIMES AND NUMBER OF VEHICLES

Shift Times	Percentage of Employees	Vehicles
7:00 AM - 3:30 PM	25	1,500
7:30 AM - 4:00 PM	26	1,560
8:00 AM - 4:30 PM	11	660
8:30 AM - 5:00 PM	38	2,280

Figure 16 shows traffic conditions after consolidation. It gives traffic volumes attributable to the CIA during both peak hours (7:30 - 8:30 AM and 4:30 - 5:30 PM), the total traffic (including CIA volumes) during both peak hours, the roadway capacities, and the level of service (LOS) during the peak hours. The work hours have been staggered so that no additional CIA traffic occurs during the peak hours. The background traffic has not been increased for future conditions because it has been assumed that the construction of Metrorail to Vienna and the construction of I-66 inside the Beltway will offset any growth in volume on Routes 123 and 193 and the George Washington Parkway. Traffic volumes were estimated for the George Washington Parkway, Route 123, and Route 193 for all hours during the AM and PM peak periods to determine if the traffic attributable to the CIA's staggered work hours would lower the LOS during other hours.

After consolidation the G.W. Parkway westbound west of the CIA site would operate at LOS E during the P.M. peak period. It currently operates at LOS E at this location. During the A.M. peak period, the G.W. Parkway eastbound east of the site would operate at LOS D between 7:00-8:00 A.M. and LOS C during the rest of the A.M. peak period.

Route 193 has very high peaking characteristics eastbound between 7:30 and 8:30 A.M. and westbound between 4:30 and 5:30 P.M. Route 193 currently operates at LOS E during these peak hours and would continue to operate at capacity in the future. Route 193 will operate at LOS C for the remainder of the peak periods in the peak direction.

Route 123 currently operates at LOS C in the A.M. peak hour (7:00-8:00 A.M.) eastbound and LOS D in the P.M. peak hour (5:00-6:00 P.M.) westbound. About half of the existing traffic consists of CIA employees. The staggered work hours will decrease the number of CIA employees on Route 123 during its A.M. and P.M. peak hours, and will therefore somewhat improve the level of service on Route 123. Route 123 will operate at LOS C eastbound during the A.M. peak period and LOS D westbound during the P.M. peak period.

There are several off-site road modification projects included as part of the Master Plan to decrease the congestion at the Route 123-Route 193 intersection. These modifications are not essential to the proposed consolidation, but they would allow for smoother traffic flow and operations at the Route 193-Route 123 intersection. They include:

- Realign Route 193 eastbound (as shown on Figure 16) at its intersection with Route 123 northbound to allow a longer weaving distance and better sight distance.

- Widen the ramp leading into the CIA from Route 123 northbound to two lanes to accommodate more vehicles waiting for the green signal.

- Update the signal system to be demand-responsive, including the three signals within the interchange area.

- Provide an exclusive left turn lane on Route 193 eastbound at the Turkey Run Access Road.

Efforts will be made by the Agency and GSA to obtain Federal assistance through the U.S. Department of Transportation for carrying out these road improvements.